



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,401	09/30/2003	Ji-Cheng Zhao	134123-1	6489

6147 7590 03/28/2006

GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER
----------

WARTALOWICZ, PAUL A

ART UNIT	PAPER NUMBER
----------	--------------

1754

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/675,401

Applicant(s)

ZHAO ET AL.

Examiner

Paul A. Wartalowicz

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-17 and 21-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-29 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/2/04</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-15, and 17, drawn to a method, classified in class 423, subclass 286, 648.1.
- II. Claims 18-20, drawn to a composition, classified in class 423, subclass 648.1.
- III. Claims 16, and 21-29, drawn to an apparatus, classified in class 422, subclass 235.

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as wherein treating the substrate to create a diffusion multiple.

Inventions I and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP §

806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus such as without a hydride recycle reactor.

Inventions III and II are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the product as claimed can be made by another and materially different apparatus such as one without a hydride recycle reactor.

If the applicant elects Group I, *an election of species must also be made.*

This application contains claims directed to the following patentably distinct species of the claimed invention:

Restriction to one of the following inventions is required under 35 U.S.C. 121:

Species A. Claims 1-11, drawn to method for making and screening a combinatorial library.

Species B. Claims 12-15, and 17, drawn to recovering hydrogen.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none of the claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims

readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Shawn McClintic on March 9, 2006 a provisional election was made without traverse to prosecute the invention of Group II drawn to a composition, claims 18-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-17 and 21-29 are withdrawn from

Art Unit: 1754

further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Gamo et al. (U.S. 4946646).

Gamo et al. teach a composition teach a composition AB<sub>a</sub> wherein A is at least one element selected from Ca, Mg, Al, Si, and B and wherein B is at least one element selected from Al, Si, Mg, and Ca and wherein a is a value of from 1.0 to 2.5 (this

Art Unit: 1754

formula meets the claimed compounds of  $\text{AlSi}$ ,  $\text{Ca}_2\text{Si}$ ,  $\text{CaSi}$ ,  $\text{CaSi}_2$ , and  $\text{Mg}_2\text{Si}$ , col. 3, lines 51-62).

Claims 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Sawa et al. (U.S. 6030724).

Sawa et al. teach a composition represented by the general formula  $\text{M}_{100-x}\text{M}'_x$  wherein M is at least one element selected from among Mg, Ca, and Li and wherein M' is at least one element selected from among Si, C, N, and B and wherein x satisfies  $30 \leq x \leq 70$  (this formula meets the claimed compounds of  $\text{Li}_7\text{Si}_3$  and  $\text{Li}_{12}\text{Si}_7$ , col. 5, lines 1-12).

### ***Claim Rejections - 35 USC § 102/35 USC § 103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 18-20 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bradley et al. (U.S. 6834508).

Bradley et al. teach a composition comprising elements from the second and third rows of the periodic table, including Li, B, C, N, Na, Si and/or compounds thereof (this disclosure inherently teaches the claimed compounds of AlSi, Ca<sub>2</sub>Si, CaSi, CaSi<sub>2</sub>, Mg<sub>2</sub>Si, Li<sub>7</sub>Si<sub>3</sub>, Li<sub>12</sub>Si<sub>7</sub>, Li<sub>22</sub>Si<sub>5</sub>, Li<sub>13</sub>Si<sub>4</sub>, NaSi, NaSi<sub>2</sub>, and Na<sub>4</sub>Si<sub>23</sub>, col. 7, lines 54-58).

If the afore mentioned compounds are not inherently taught, it would be obvious to construct the compounds AlSi, Ca<sub>2</sub>Si, CaSi, CaSi<sub>2</sub>, Mg<sub>2</sub>Si, Li<sub>7</sub>Si<sub>3</sub>, Li<sub>12</sub>Si<sub>7</sub>, Li<sub>22</sub>Si<sub>5</sub>, Li<sub>13</sub>Si<sub>4</sub>, NaSi, NaSi<sub>2</sub>, and Na<sub>4</sub>Si<sub>23</sub> for the reasoned explanation that Bradley et al. teach a material constructed from elements including Li, B, C, N, Na, Si and/or compounds thereof (col. 7, lines 54-58) and are capable of hydrogen storage (col. 7, lines 33-36) such that the compounds of AlSi, Ca<sub>2</sub>Si, CaSi, CaSi<sub>2</sub>, Mg<sub>2</sub>Si, Li<sub>7</sub>Si<sub>3</sub>, Li<sub>12</sub>Si<sub>7</sub>, Li<sub>22</sub>Si<sub>5</sub>, Li<sub>13</sub>Si<sub>4</sub>, NaSi, NaSi<sub>2</sub>, and Na<sub>4</sub>Si<sub>23</sub> are compounds of the afore mentioned elements.



**Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul Wartalowicz  
March 14, 2006

  
COLLEEN P. COOKE  
PRIMARY EXAMINER